Coordinate Algebra EOCT Review Packet

This packet it being provided to ALL Coordinate Algebra students as a snap shot of what types of problems they MAY experience on the EOCT exam that is due to be given in early December. We will be reviewing all of Units 1-6 upon return from the Thanksgiving Break. It would be best if you invest considerable time and energy into your own review prior to our class review beginning. As an incentive to have you fully utilize this packet, we are offering a SPECIAL OPPORTUNITY. If you complete (see details below) this packet and submit it to your teacher on Monday, November 26 (the first day back from the Thanksgiving Break), then you will get up to a 100 Homework grade added to your homework scores AND your lowest current Unit Homework Average will be replaced with this grade. If you choose not to do this over the break, it will NOT hurt your grade, but you will have missed out on an incredible opportunity. Please familiarize yourself with the EOCT Formula Sheet at the end of this packet.

What does it mean to COMPLETE this packet?
1. **Every single problem is answered.**
2. **Every effort is made to get the CORRECT answer (this could be part of the grade)**
3. **Every problem that can have work shown, has work shown.**
4. **If there is no work to show, then you should explain in a complete sentence how you arrived at your answer. This may involve giving a definition or explaining how you interpreted a graph. IT IS NOT OKAY TO SIMPLY CIRCLE A LETTER AND MOVE ON.**

1.   A rectangle has an area of 12 m^2 and a width of 400 cm. What is the length of the rectangle?
a. 3 cm
b. 30 cm
c. 300 cm
d.   3000 cm

2.   What is the area of a circle with a circumference of 43.98226 inches? (Use 3.14159 for π)
a. 153.44029 in.^{2}
b. 153.93791 in.^{2}
c. 153.9325 in.^{2}
d. 153.9394 in.^{2}

3.   The tension caused by a wave moving along a string is found using the formula $T = \dfrac{mv^2}{L}$.
If m is the mass of the string in grams, L is the length of the string in centimeters, and v is the velocity of the wave in centimeters per second, what is the unit of the tension of the string, T?
a. gram-centimeters per second squared
b. centimeters per second squared
c. grams per centimeter-second squared
d. centimeters squared per second

4.   The kinetic energy of an object in motion is found using the formula $KE = \dfrac{1}{2}mv^2$, where m is the mass of the object in kilograms and v is the velocity of the object in meters per second. If the velocity of the object is 20 meters per second, what is the coefficient of m?
a. 10 meters/second
b. 20 meters/second
c. 200 meters squared/second squared
d. 400 meters squared/second squared

5.   A certain population of bacteria has a growth rate of 0.02 bacteria/hour. The formula

for the growth of the bacteria's population is $A = P_0(2.71828)^{0.02t}$ where P_0 is the original population and t is the time in hours. If you begin with 200 bacteria, approximately how many of the bacteria can you expect after 100 hours?

a. 7.38905
b. 271.828
c. 1477.81
d. 20,000

6.   Two angles of a triangle measure $20°$ and $50°$. What is the measure of the third angle?

a. $30°$
b. $70°$
c. $110°$
d. $160°$

7.   What is the solution to the equation $P = 2l + 2w$ when solved for w?

a. $w = \dfrac{2l}{P}$

b. $w = \dfrac{2l - P}{2}$

c. $w = 2l - \dfrac{P}{2}$

d. $w = \dfrac{P - 2l}{2}$

8.   Bruce owns a business that produces widgets. He must bring in more in revenue than he pays out in costs in order to turn a profit.
- It costs $10 in labor and materials to make each of his widgets.
- His rent each month for his factory is $4000.
- He sells each widget for $25.

How many widgets does Bruce need to sell each month to make the minimum profit?
a. 160
b. 260
c. 267
d. 400

9.   Emily wants to solve the equation $ax - w = 3$ for w. Which equation shows the results of a correctly applied strategy?

a. $w = ax - 3$
b. $w = ax + 3$
c. $w = 3 - ax$
d. $w = 3 + ax$

10. Which equation is equivalent to $\dfrac{7x}{4} - \dfrac{3x}{8} = 11$?

a. $17x = 88$
b. $11x = 88$
c. $4x = 44$
d. $2x = 44$

11. Which equation is equivalent to $4n = 2(t - 3)$ when solved for t?

a. $t = \dfrac{4n - 2}{3}$

b. $t = \dfrac{4n - 3}{2}$

c. $t = \dfrac{4n + 6}{2}$

d. $t = 4n - 3$

12. Which equation is equivalent to $6(x + 4) = 2(y + 5)$ when solved for y?

a. $y = x + 3$
b. $y = x + 5$
c. $y = 3x + 7$
d. $y = 3x + 17$

13. This equation can be used to find h, the number of hours it takes Flo and Bryan to mow their lawn. $\dfrac{h}{3} + \dfrac{h}{6} = 1$
How many hours will it take them?

a. 6
b. 3
c. 2
d. 1

14. A ferry boat carries passengers back and forth between two communities on the Peachville River.
• It takes 30 minutes longer for the ferry to make the trip upstream than downstream.
• The ferry's average speed in still water is 15 miles per hour.
• The river's current is usually 5 miles per hour.
This equation can be used to determine how many miles apart the two communities are.
$$\dfrac{m}{15 - 5} = \dfrac{m}{15 + 5} + 0.5$$
What is m, the distance between communities?

a. 0.5 miles
b. 5 miles
c. 10 miles
d. 15 miles

15.   Which expression represents all values of x for which the inequality $\dfrac{2}{3} + \dfrac{x}{3} > 1$ is true?

a. $x < 1$
b. $x > 1$
c. $x < 5$
d. $x > 5$

16.   A manager is comparing the cost of buying ball caps with the company emblem from two different companies.
• Company X charges a $50 fee plus $7 per cap.
• Company Y charges a $30 fee plus $9 per cap.
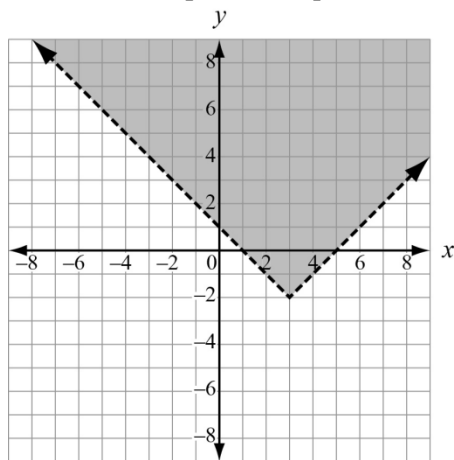For what number of ball caps will the manager's cost be the same for both companies?

a. 10 caps
b. 20 caps
c. 40 caps
d. 100 caps

17.   A shop sells one-pound bags of peanuts for $2 and three-pound bags of peanuts for $5. If 9 bags are purchased for a total cost of $36, how many three-pound bags were purchased?

a. 3
b. 6
c. 9
d. 18

18.   Which pair of inequalities is shown in the graph?

a. $y > -x + 1$ and $y > x - 5$
b. $y > x + 1$ and $y > x - 5$
c. $y > -x + 1$ and $y > -x - 5$
d. $y > x + 1$ and $y > -x - 5$

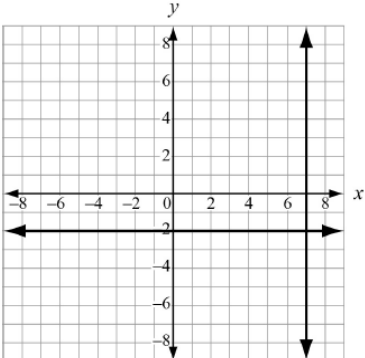**19.**   Which graph would represent a system of linear equations that has multiple common coordinate pairs?
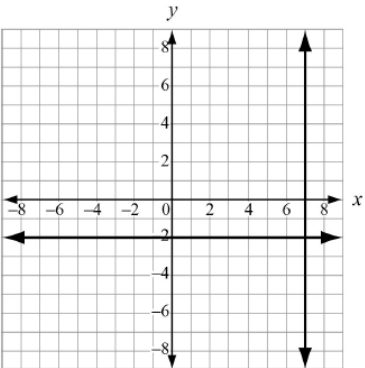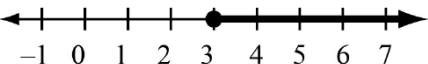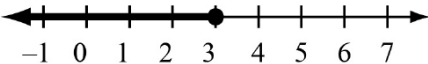
a.
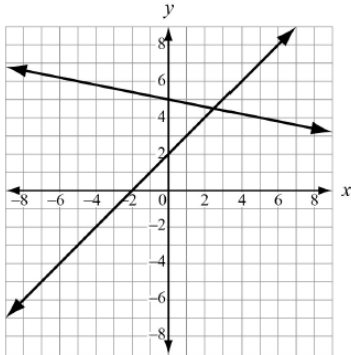
b.
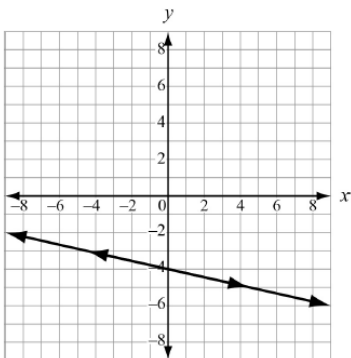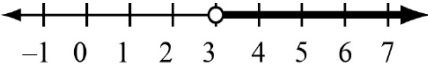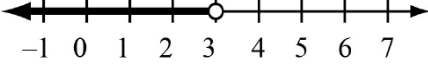
c.

d.

20. Which graph represents the solution to $x > 3$?

a.

$$-1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7$$

b.

$$-1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7$$

c.

$$-1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7$$

d.

$$-1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad 7$$
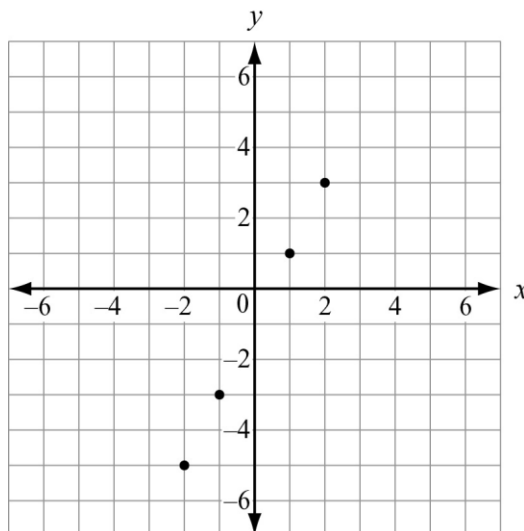
21. Which equation corresponds to the graph shown?

a. $y = x + 1$
b. $y = 2x + 1$
c. $y = x - 2$
d. $y = 3x - 1$
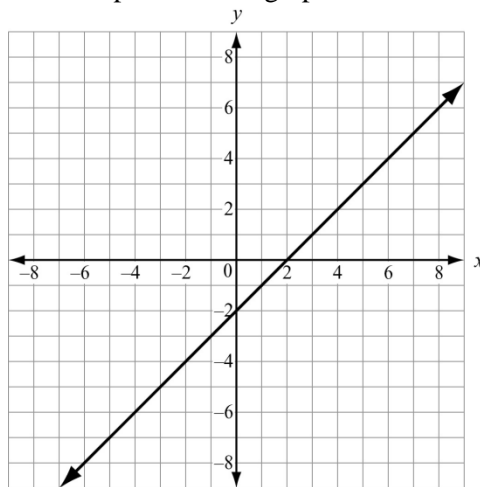
22. Which equation corresponds to the points in the coordinate plane?

a. $y = 2x - 1$
b. $y = x - 3$
c. $y = x + 1$
d. $y = x - 1$

23.   Based on the tables, what common point do the equations $y = -x + 5$ and $y = 2x - 5$ share?

$y = -x + 5$	
x	y
−1	6
0	5
1	4
2	3
3	2

$y = 2x - 1$	
x	y
−1	−3
0	−1
1	1
2	3
3	5

a. (1,1)
b. (3,5)
c. (2,3)
d. (3,2)

24.   The first term in this sequence is -1.

n	1	2	3	4	5	. . .
a_n	−1	1	3	5	7	. . .

Which function represents the sequence?

a. $n + 1$
b. $n + 2$
c. $2n - 1$
d. $2n - 3$

25.   Which function is modeled in this table?

x	$f(x)$
1	8
2	11
3	14
4	17

a. $f(x) = x + 7$
b. $f(x) = x + 9$
c. $f(x) = 2x + 5$
d. $f(x) = 3x + 5$

26.   Which explicit formula describes the pattern in this table?

d	C
2	6.28
3	9.42
5	15.70
10	31.40

a. $d = 3.14 \times C$
b. $3.14 \times C = d$
c. $31.4 \times 10 = d$
d. $C = 3.14 \times d$

27.   If $f(12) = 4(12) - 20$, which function gives $f(x)$?

a. $f(x) = 4x$
b. $f(x) = 12x$
c. $f(x) = 4x - 20$
d. $f(x) = 12x - 20$

28.   A farmer owns a horse that can continuously run an average of 8 miles an hour for up to 6 hours. Let *y* be the distance the horse can travel for a given *x* amount of time in hours. The horse's progress can be modeled by a function. Which of the following describes the domain of the function?

a. $0 \leq x \leq 6$
b. $0 \leq y \leq 6$
c. $0 \leq x \leq 48$
d. $0 \leq y \leq 48$

29.   A population of squirrels doubles every year. Initially there were 5 squirrels. A biologist studying the squirrels created a function to model their population growth, $P(t) = 5(2^t)$ where *t* is time. The graph of the function is shown. What is the range of the function?

a. any real number
b. any whole number greater than 0
c. any whole number greater than 5
d. any whole number greater than or equal to 5
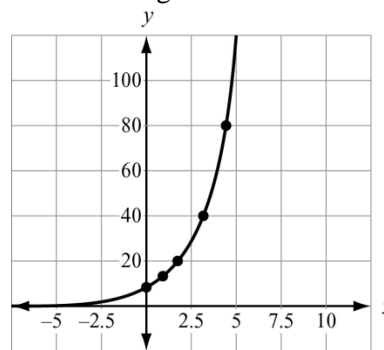
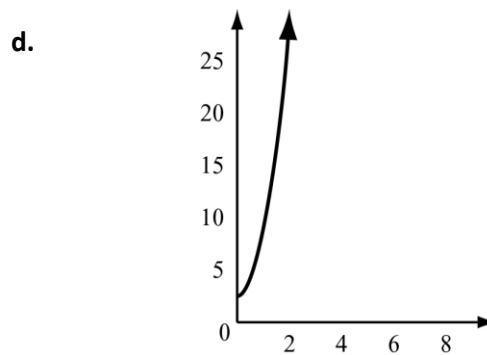**30.**   The function graphed on this coordinate grid shows *y*, the height of a dropped ball in feet after its *x*th bounce.
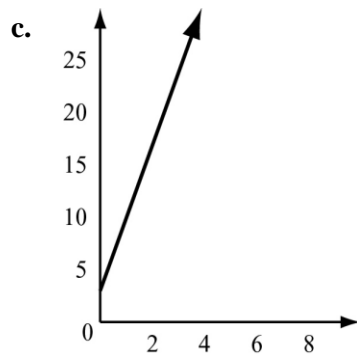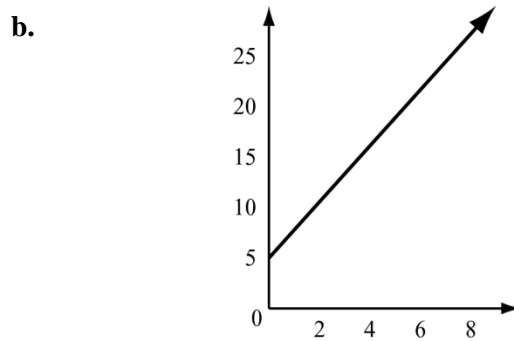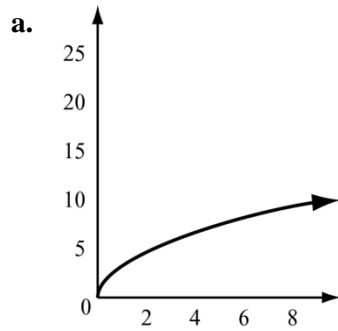
On which bounce was the height of the ball 10 feet?

a. bounce 1
b. bounce 2
c. bounce 3
d. bounce4
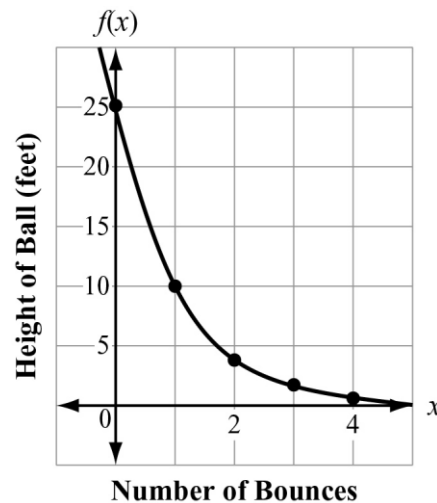
31.   To rent a canoe, the cost is $3 for the oars and life preserver, plus $5 an hour for the canoe. Which graph models the cost of renting a canoe?

a.

b.

c.

d.

32.   Juan and Patti decided to see who could read the most books in a month. They began to keep track after Patti had already read 5 books that month. This graph shows the number of books Patti read for the next 10 days.

Number of Books Read
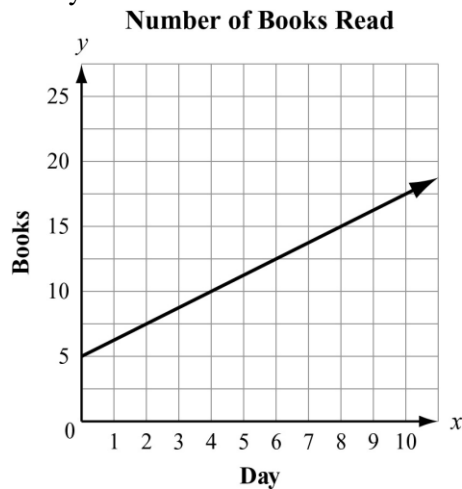
If Juan has read no books before the fourth day of the month and he reads at the same rate as Patti, how many books will he have read by day 12?

a.   5
b.   10
c.   15
d.   20

33.   Which function represents this sequence?

n	1	2	3	4	5	...
a_n	6	18	54	162	486	...

a. $f(n) = 3^{n-1}$

b. $f(n) = 6^{n-1}$

c. $f(n) = 3(6^{n-1})$

d. $f(n) = 6(3^{n-1})$

34.   The first term in this sequence is 3.

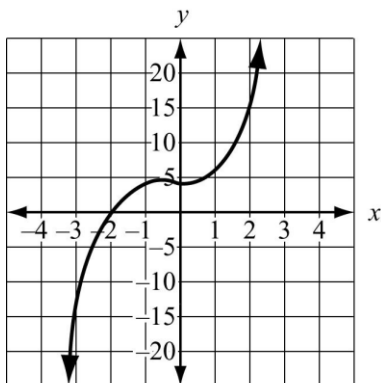| n	1	2	3	4	5	...
a_n	3	10	17	24	31	...

Which function represents the sequence?

a. $f(n) = n + 3$

b. $f(n) = 7n - 4$

c. $f(n) = 3n + 7$

d. $f(n) = n + 7$

35.   The points (0, 1), (1, 5), (2, 25), (3, 125) are on the graph of a function. Which equation represents that function?

a. $f(x) = 2^x$

b. $f(x) = 3^x$

c. $f(x) = 4^x$

d. $f(x) = 5^x$

36.   Which statement best describes the behavior of the function within the interval $x = -3$ to $x = 0$?

a. From left to right, the function rises only.

b. From left to right, the function falls and then rises.

c. From left to right, the function rises and then falls.

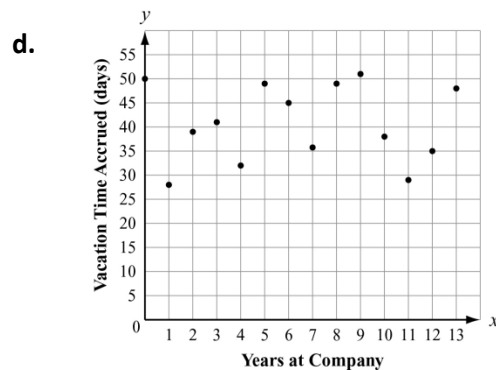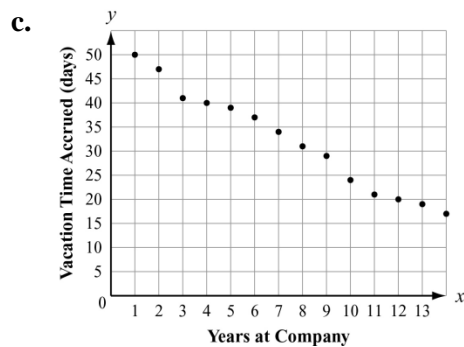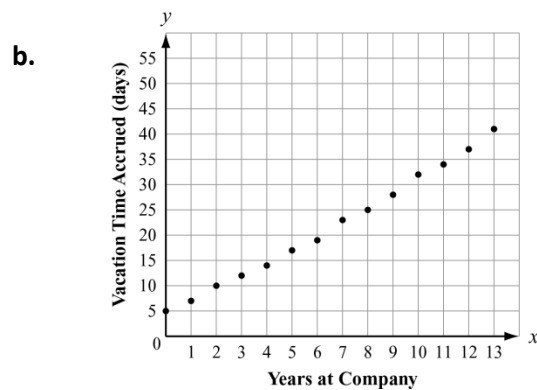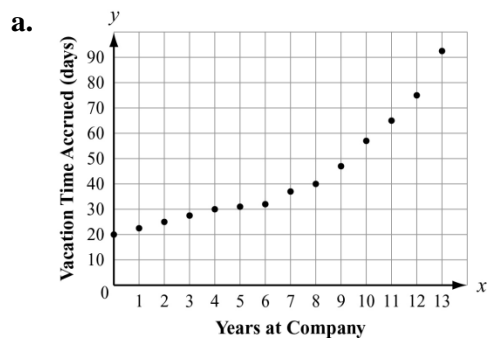d. From left to right, the function falls, rises, and then falls.

37. A function *g* is an odd function. If *g*(-3) = 4, which of the points lie on the graph of *g*?

a. $(3, -4)$
b. $(-3, 4)$
c. $(4, -3)$
d. $(-4, 3)$

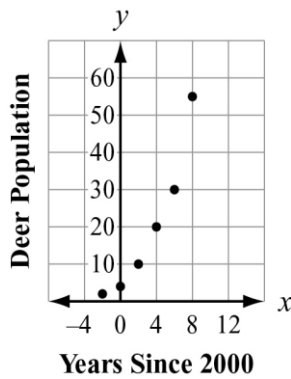**38.** Which statement is true about the function $f(x)=7$?

a. The function is odd because $-f(x) = -f(x)$.
b. The function is even because $-f(x) = f(-x)$.
c. The function is odd because $f(x) = f(-x)$.
d. The function is even because $f(x) = f(-x)$.

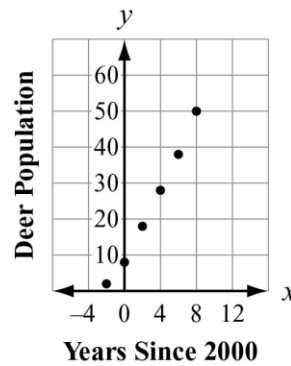**39.** Which scatter plot represents a model of linear growth?

a.

b.

c.

d.

40.   Which scatter plot best represents a model of exponential growth?

a.

Deer Population

Years Since 2000

b.

Deer Population

Years Since 2000

c.

Deer Population

Years Since 2000

d.

Deer Population

Years Since 2000
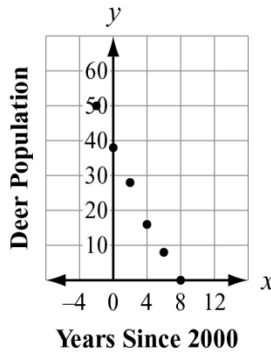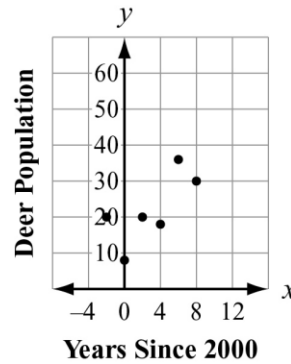
41.   Which table represents a function with a variable growth rate?

a.

x	0	1	2	3	4
y	5	6	7	8	9

b.

x	0	1	2	3	4
y	0	22	44	66	88

c.

x	0	1	2	3	4
y	5	13	21	29	37

d.

x	0	1	2	3	4
y	0	3	9	27	81

42.   If the parent function is $f(x) = mx + b$, what is the value of the parameter m for the curve passing through the points (-2, 7) and (4, 3)?

a.   -9

b. $-\dfrac{3}{2}$

c.   -2

d. $-\dfrac{2}{3}$

43.   **This table shows the average low temperature, in °F, recorded in Macon, GA, and Charlotte, NC, over a six-day period.**

Day	1	2	3	4	5	6
Temperature, in °F, in Macon, GA	71	72	66	69	71	73
Temperature, in °F, in Charlotte, NC	69	64	68	74	71	75

Which conclusion can be drawn from the data?
a.   The interquartile range of the temperatures is the same for both cities.
b.   The lower quartile for the temperatures in Macon is lower than the lower quartile for the temperatures in Charlotte.
c.   The mean and median temperatures of Macon were higher than the mean and median temperatures of Charlotte.
d.   The upper quartile for the temperatures in Charlotte was lower than the upper quartile for the temperatures in Macon.

44.   **Peter went bowling, Monday to Friday, two weeks in a row. He only bowled one game each time he went. He kept track of his scores below.**
Week 1: 70, 70, 70, 73, 75
Week 2: 72, 64, 73, 73, 75
What is the best explanation of why Peter's Week 2 mean score was lower than his Week 1 mean score?
a.   Peter received the same score three times in Week 1.
b.   Peter had one very bad score in Week 2.
c.   Peter did not improve as he did the first week.
d.   Peter had one very good score in Week 1.

45.   **A school was having a coat drive for a local shelter. A teacher determined the median number of coats collected per class and the interquartile ranges of the number of coats collected per class for the freshman and for the sophomores.**

• The freshman collected a median number of coats per class of 10, and the interquartile range was 6.

• The sophomores collected a median number of coats per class of 10, and the interquartile range was 4.

Which range of numbers includes the third quartile of coats collected for both classes?

a.   4 to 14
b.   6 to 14
c.   8 to 15
d.   12 to 15

46.   **A reading teacher recorded the number of pages read in an hour by each of her students. The numbers are shown below.**

**44, 49, 39, 43, 50, 44, 45, 49, 51**

For this data, which summary statistic is NOT correct?
a.   The minimum is 39.
b.   The lower quartile is 44.
c.   The median is 45.
d.   The maximum is 51.

47.   **A science teacher recorded the pulse rates for each of the students in her classes after the students had climbed a set of stairs. She displayed the results, by class, using the box plots shown.**

Which class had the highest pulse rates after climbing the stairs?

a.   Class 1
b.   Class 2
c.   Class 3
d.   Class 4

Pulse Rates

Class 1

Class 2
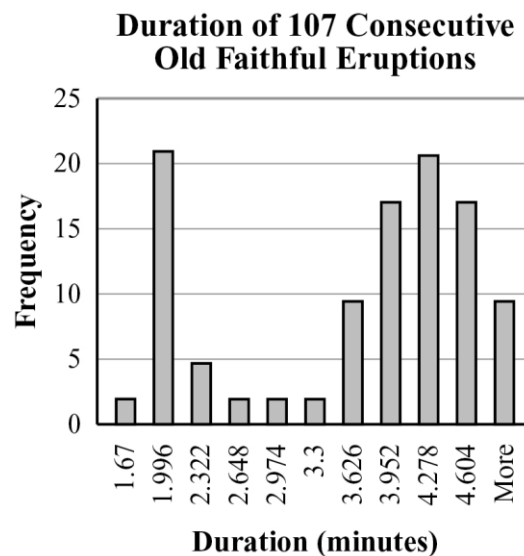
Class 3

Class 4

60 65 70 75 80 85 90 95 100
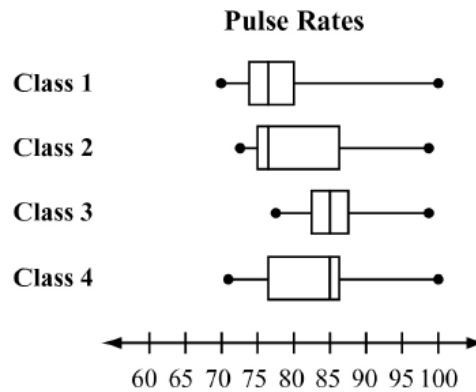
48.   **This table shows admission price for various museums in the same city. Which is the mean absolute deviation for this set of data?**
a. $1.26
b. $6.30
c. $10.05
d. $10.13

Museum Prices				
$9.00	$12.00	$9.75	$8.25	$11.25

49.   **This histogram shows the frequency distribution of duration times for 107 consecutive eruptions of the Old Faithful geyser. The duration of an eruption is the length of time, in minutes, from the beginning of the spewing of water until it stops. What is the BEST description for the distribution?**

a.   bimodal
b.   uniform
c.   multi-outliers
d.   skewed to the right

Duration of 107 Consecutive Old Faithful Eruptions

50.   **A teacher determined the median scores and interquartile ranges of scores for a test she gave to two classes**

• In Class 1, the median score was 70 points, and the interquartile range was 15 points.

• In Class 2, the median score was 75 points, and the interquartile range was 12 points.

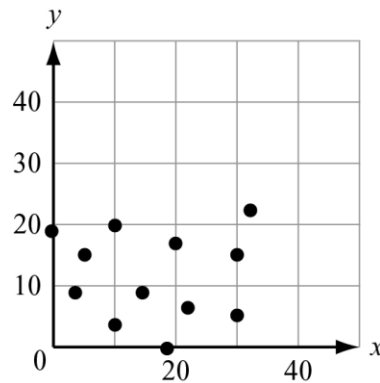**Which range of numbers includes only third quartile of scores for both classes?**

a.   70 to 87 points
b.   70 to 85 points
c.   75 to 87 points
d.   75 to 85 points

51.   **Which graph displays a set of data for which a linear function is the model of best fit?**
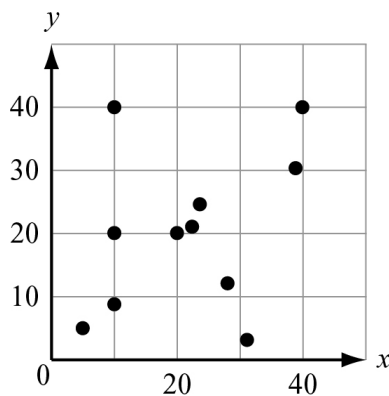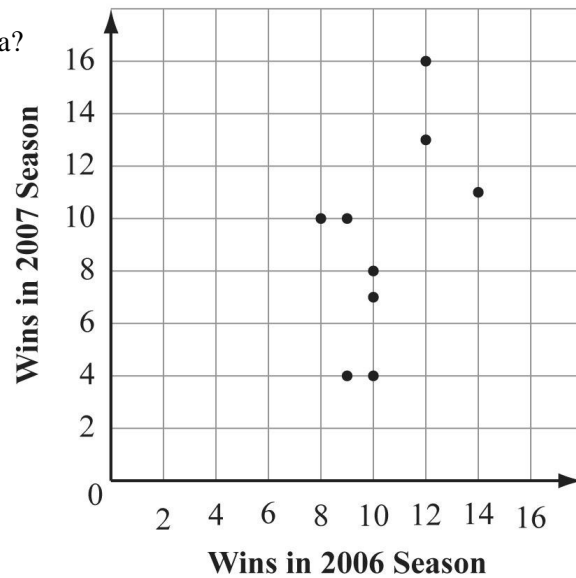
a.
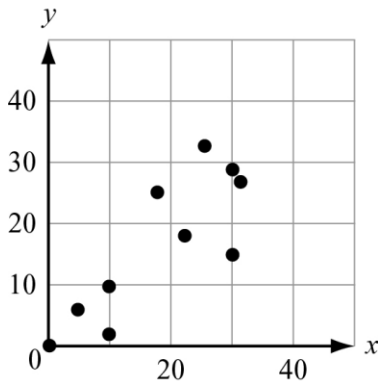
b.

c.
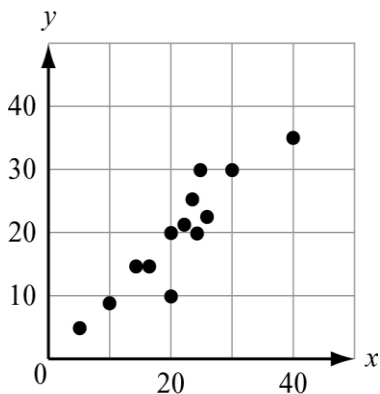
d.

52. **This graph plots the number of wins in the 2006 and 2007 seasons for a sample of professional football teams.**

Team Wins, 2006 and 2007

Which equation BEST represents a line that matches the trend of this data?

a. $y = \frac{1}{2}x$

b. $y = \frac{1}{2}x + 8$

c. $y = 2x - 6$

d. $y = 2x - 12$

Wins in 2007 Season

Wins in 2006 Season

53. **The graph above plots the number of wins in the 2006 and 2007 seasons for a sample of professional football teams.**
Based on the regression model, what is the predicted number of 2007 wins for a team that won 5 games in 2006?

a. 3
b. 4
c. 5
d. 6

54. **How would you describe the correlation of the two variables based on the scatter plot?**
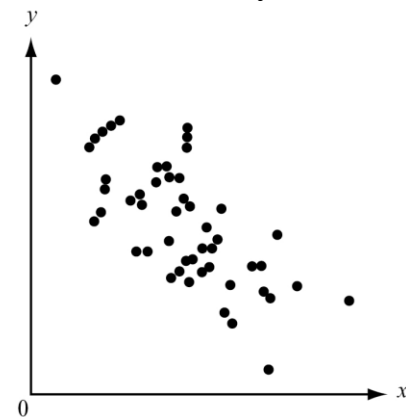

a. positive, strong linear
b. negative, weak linear
c. negative, fairly strong linear
d. little or no correlation

55.   **A regular pentagon is centered about the origin and has a vertex at (0, 4).**

**Which transformation maps the pentagon onto itself?**

a.   a reflection across line *m*
b.   a reflection across the *x*-axis
c.   a clockwise rotation of 100° about the origin
d.   a clockwise rotation of 144° about the origin
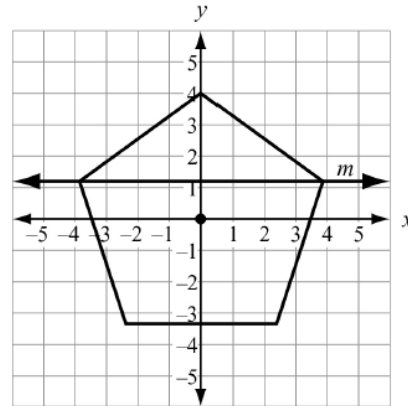
56.   **A parallelogram has vertices at (0, 0), (0, 6), (4, 4), and (4, -2).**

Which transformation maps the parallelogram to itself?

a.   a reflection across the line $x = 2$
b.   a reflection across the line $y = 2$
c.   a rotation of 180 about the point (2, 2)
d.   a rotation of 180 about the point (0, 0)
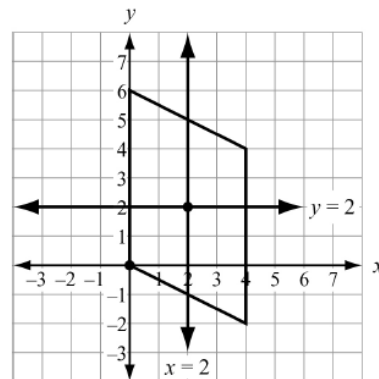
57.   **Which sequence of transformations maps △*ABC* to △*RST* ?**

a.   Reflect △*ABC* across the line $x = -1$. Then translate the result 1 unit down.
b.   Reflect △*ABC* across the line $x = -1$. Then translate the result 5 units down.
c.   Translate △*ABC* 6 units to the right. Then rotate the result 90 clockwise about the point (1, 1).
d.   Translate △*ABC* 6 units to the right. Then rotate the result 90 counterclockwise about the point (1, 1).
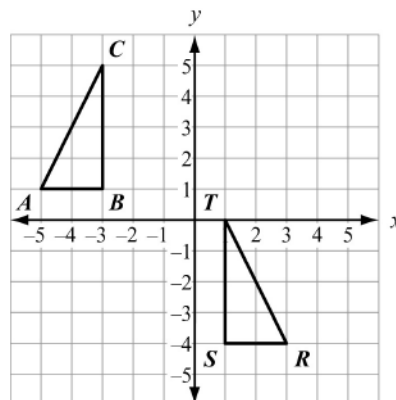
58. An equation of line *a* is $y = -\frac{1}{2}x - 2$.

Which is an equation of the line that is perpendicular to line *a* and passes through the point (-.4, 0)?

a. $y = -\frac{1}{2}x + 2$

b. $y = -\frac{1}{2}x + 8$

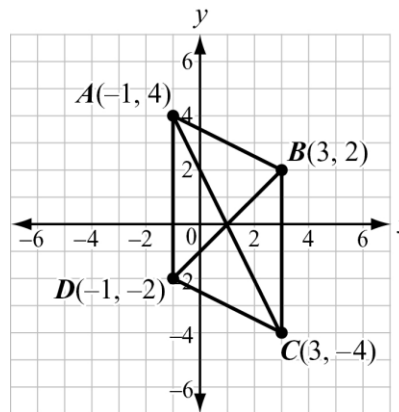c. $y = 2x - 2$

d. $y = 2x + 8$
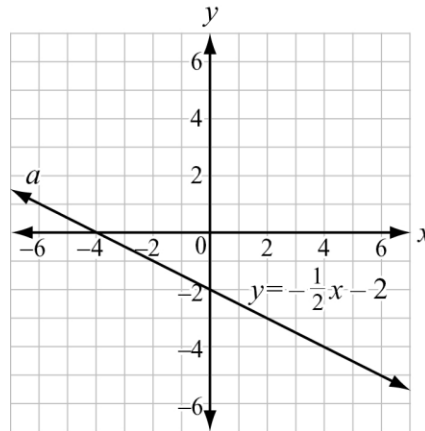
59. Given the points *P*(2, -1) and *Q*(-9, -6), what are the coordinates of the point on directed line segment *PQ* that partitions *PQ* in the ratio 3/2?

a. $\left(-\frac{23}{5}, -4\right)$

b. $\left(-\frac{12}{5}, -3\right)$

c. $\left(-\frac{5}{3}, -\frac{8}{3}\right)$

d. $\left(-\frac{3}{5}, -\frac{3}{8}\right)$

60. Parallelogram *ABCD* has vertices as shown.
Which equation would be used in proving that the diagonals of parallelogram *ABCD* bisect each other?

a. $\sqrt{(3-1)^2 + (2-0)^2} = \sqrt{(1-3)^2 + (0+4)^2}$

b. $\sqrt{(3+1)^2 + (2+0)^2} = \sqrt{(1+3)^2 + (0-4)^2}$

c. $\sqrt{(-1-1)^2 + (4-0)^2} = \sqrt{(1-3)^2 + (0+4)^2}$

d. $\sqrt{(-1+1)^2 + (4+0)^2} = \sqrt{(1+3)^2 + (0-4)^2}$

61. Triangle *ABC* has vertices as shown.
What is the area of the triangle?

a. $\sqrt{72}$ square unit

b. 12 square units

c. $\sqrt{288}$ square units

d. 24 square units